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TITLE OF THESIS...AN....EXPLORATORY....STUDY....OF.
PERSONALITY....VARIABLES....UNIQUE
TO....CREATIVE....HIGH....SCHOOL....STUDENTS

UNIVERSITY.....U....OF....A.....

DEGREE FOR WHICH THESIS WAS PRESENTED....M....Ed.....

YEAR THIS DEGREE GRANTED.....1973.....

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THE UNIVERSITY OF ALBERTA

AN EXPLORATORY STUDY OF PERSONALITY VARIABLES UNIQUE TO CREATIVE HIGH SCHOOL STUDENTS

by

© SYLVIA DAWN KRYWANIUK

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH

IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE

OF MASTER OF EDUCATION

DEPARTMENT OF EDUCATIONAL PSYCHOLOGY

EDMONTON, ALBERTA

FALL, 1973

THE UNIVERSITY OF ALBERTA

FACULTY OF GRADUATE STUDIES AND RESEARCH

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled "An exploratory study of personality variables unique to creative high school students" submitted by Sylvia Dawn Krywaniuk in partial fulfilment of the requirements for the degree of Master of Education.

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Supervisor

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Date September 28/1973

ABSTRACT

Creativity is a much discussed topic in the field of education, but appears to lack an operational definition and a viable means of assessment. Much research has been carried out to develop cognitive instruments to measure levels of creativity, but little consensus has been obtained, and many of the tests seem to be assessing intelligence rather than creativity. A more recent trend is toward personality assessment as a means of differentiating between High Creative and Low Creative students. This is a relatively new area of creativity research, and warrants further exploration.

The present study, which is exploratory in nature, has focused on the following questions:

1. Are ratings a useful method of selecting creative students for research purposes? How much inter- and intra-group consensus is obtained between teacher and peer ratings?
2. Is an Adjective Check List a potentially useful method of obtaining consensus opinion, such as for the selection of creativity criteria? How much consensus is obtained between teacher and student check lists, and to what extent do they agree with published creativity scales obtained in a similar way?
3. Do the personality profiles of those students identified as highly creative through pooled ratings procedures differ from other students? Are there personality variables which uniquely distinguish "creative high school students" from their less creative peers?

Ten high school classes (Grades XI and XII) and their teachers were used in the study to identify a High Creative, and a Low Creative, group

of students. The students completed a Personality Questionnaire, which was used to isolate personality factors which differentiated between the two groups. These subjects, plus two Evening Credit classes, also identified criteria they would use to describe creativity, by checking adjectives from an Adjective Check List. The findings show that:

1. Considerable consensus is obtained between students and teachers in identifying very High, or very Low, Creative students through a rating procedure.
2. An Adjective Check List was found to be only partially useful in obtaining group opinions. Considerable consensus was obtained between students and teachers in selecting a small group of adjectives which appear to be consistently used in describing creativity. However, the adjectives chosen by the subjects in this study differed from published Creativity scales, in that the subjects chose exclusively positive adjectives. Published scales also included several negative aspects of creativity.
3. Personality differences were found between High and Low Creative groups. Two personality factors were identified which significantly differed between the two groups.

ACKNOWLEDGEMENTS

The writer wishes to thank her supervisor, Dr. Paul Sartoris, for the assistance, interest and guidance he has offered throughout the planning and writing of this thesis. She is also indebted to Dr. Ralph Hakstian for his help with the statistical design and analysis of the research, and to her committee members, Dr. Don Sawatsky and Professor Richard Glade, for their support and advice.

The writer also wishes to express gratitude to Val Richmond, who helped mark the data. Appreciation is also extended to the teachers and students who so willingly gave their time to take part in this study.

Lastly, much appreciation goes to the writer's husband, Larry, and daughter, Debbie, who were often neglected during the more hectic moments of thesis writing. Without their support and understanding the thesis could not have been completed.

TABLE OF CONTENTS

CHAPTER		PAGE
I	INTRODUCTION	1
	Statement of the Problem	11
II	METHOD	13
	Subjects	13
	Teacher Data	14
	Peer Data	16
	Individual Student Data	18
	Application of the Design	18
III	RESULTS	24
	Criterion Adjectives for "Creativity"	24
	High and Low Creative Groups	30
	Personality Variables which Distinguish Creative Students	33
	Creativity Definitions	40
	Conclusion	42
IV	DISCUSSION	43
	Implications for Educational Practice and Research	46
	Limitations	51
V	SUMMARY	54
REFERENCES		57
APPENDIX A		61
APPENDIX B		67
APPENDIX C		69

LIST OF TABLES

TABLE		PAGE
I	A Common Item Creativity Scale for the Adjective Check List	17
II	Titles and Symbols for Designating the 14 Personality Factors on Cattell's HSPQ	19
III	Comparison of First 50 Adjectives Selected to Define Creativity by Students and Teachers	25
IV	Comparison of Combined Teacher-Student Creativity (Cr) Scale with Published Creativity Scales Formed from the Adjective Check List	28
V	Comparison of Composite 26-Item Cr Scale with Yarnell's (1971) Combined 28-item Cr Scale	31
VI	Comparison of Peer and Teacher Ratings of Creative Students	32
VII	Results of Analysis of Variance of High and Low Creative Group Means According to Cattell's HSPQ	34
VIII	Characteristic Expressions of Factor H	35
IX	Characteristic Expressions of Factor I	37
X	Characteristic Expressions of Factor O	38
XI	Results of Discriminant Function Analysis between the Means of High and Low Creatives on Cattell's HSPQ	39

LIST OF FIGURES

FIGURE		PAGE
1	Personality Profile Comparison of High Creatives and Low Creatives	36

CHAPTER I

INTRODUCTION

> . . . creativity, like existentialism, has become increasingly inflated and hazy. Everybody is for it, but nobody knows what it is. (van den Haag, 1963; in Arasteh, 1968, p. 88)

Research into the nature of creativity came into vogue in the 1950's with increasing numbers of educational programs throughout the United States dedicated to creativity as the most important goal of education (Barron, 1969). Yet, after twenty years of extensive research into the area, no common conceptualization of "creativity" has been attained.

Guilford, in his Presidential address at the 1950 convention of the American Psychological Association, remarked: "I discuss the subject of creativity with considerable hesitation, for it represents an area in which psychologists, whether they be angels or not, have feared to tread (1950, p. 444)."

Thus, despite the quantity of research into the topic of creativity, the quality often leaves much to be desired. There has been a general failure to offer a viable operational definition of creativity. As Vernon points out: "A good deal of the confusion in this area arises from loose usage of terms like creative, original, imaginative, non-conformist, gifted, talented, genius, etc. (1970, p. 12)."

However, as Anderson (1965) suggests, maybe the very nature of creativity leads to a paradox in applying the scientific approach, in that: validity means likeness and conformity whereas creativity means uniqueness and originality.

Barron's definition of creativity as ". . . reliance upon intuition, hunches and inexplicable feelings; trusting non-rational processes of

one's own mind (1968, p. 23)" suggests a rather nebulous entity which implicitly defies objective, qualitative definition and measurement.

The word "creativity" comes from the Latin creare (to bring into being). In layman's language it is commonly applied to certain products which are deemed to be the results of creative acts, thus confining creativeness to certain specific areas of human endeavor. Consequently, it is assumed that any painter, any poet, any composer is necessarily a creative person. Alternatively, creativity may be viewed as a process, thereby including the person's lifestyle as well as his tangible achievements.

One of the major problems in defining creativity has been to formulate a broad enough definition to include all forms of creativity, while at the same time excluding other factors such as intelligence. Most of the major research into the area has been based upon an initial statement of definition, upon which the subsequent study has been pursued. Unfortunately, there has been considerable disagreement over definitions, thus making research comparisons extremely difficult.

Guilford's study of creativity began in 1949, and his research has been twofold: (1) the development of many new types of tests designed to measure different aspects of creative behavior and (2) the use of the statistical techniques of factor analysis to identify the separate factors or aptitudes that constitute creativity (Anastasi, 1965).

Guilford's work developed into a comprehensive study of the nature of intelligence as a whole. His Structure of Intellect model (1959) defines creative aptitudes under the heading of "divergent thinking".

Getzels and Jackson (1962) in their exploratory study of gifted students attempted to differentiate between creativity and intelligence.

Their definition of creativity was strongly influenced by Guilford's divergent thinking model, and led to the development of instruments measuring divergency of thought and cognitive complexity. They hypothesized that highly intelligent students would perform best on a test of convergent thinking, such as the typical intelligence test. Highly creative students, however, would underachieve on an intelligence test and perform better on an instrument devised to allow for divergent and imaginative responses. They suggest that intelligence and creativity are alternate forms of giftedness:

> . . . if we recognize that learning involves the production of novelty as well as the remembering of course content--discovering as well as recalling--measures of creativity as well as IQ become appropriate defining characteristics of giftedness. (Getzels & Jackson, 1962, p. 7)

Torrance applied a similar approach to the study of creativity as did Getzels and Jackson, but tended to exaggerate the contrast between "intelligence" (as defined by traditional intelligence tests) and creativity. However, Torrance also gave considerable attention to the personality problems of highly creative children and claimed that they were estranged from teachers and peers (Anastasi, 1965).

Torrance defined creativity as: "The process of sensing gaps or disturbing missing elements; forming new hypotheses concerning them; testing these hypotheses and communicating the results, possibly modifying and retesting the hypotheses (1963, p. 80)." He has compiled a battery of tests designed to assess this process in an objective way and which he claims provide an index of creative potential. Torrance suggests that it should be possible to provide school psychologists and counsellors with standardized batteries of tests of creative thinking, which would be as useful and as easy to administer as such individually

administered intelligence tests as the Wechsler Intelligence Scale for Children and the Stanford-Binet (Torrance, 1962). Thus, it seems that Torrance views creativity as an easily definable, cognitive style, which differs from intelligence in that it favors a divergent thinking process.

Wallach (1970) suggests that Torrance's definition of creativity is in reality a general intelligence concept, liberalized by the addition of references to a problem-solution phase. For this reason Wallach questions the distinction made by Torrance between intelligence and creativity, and challenges the notion of a threshold of intelligence necessary for creativity since he feels that Torrance's tests are in fact measuring intelligence factors. Wallach and Kogan (1965) based their creativity research upon Mednick's (1962) definition of creative thinking: ". . . the forming of associative elements into new combinations which either meet specified requirements or are in some way useful (p. 221)." Using this associative concept of creativity, Wallach and Kogan designed tests to generate unique responses to associational material. This model assumes a hierarchy of potential associations to any stimulus, with unique responses scoring higher for creativity than stereotypic ones.

Whereas these definitions of creativity have relied almost exclusively upon cognitive factors, there have also been attempts to define creativity as a perceptual mode and as a lifestyle.

Schachtel (1959) suggests that creativity should be studied through the framework of perceptual theory, since that which distinguishes creativity is the openness of the individual to the world around him, whereby he becomes more fully receptive to new reflections of the world

and its objects. The developmental stages of perception pass from autocentricity in infancy and childhood to allocentricity in adolescence and adulthood. Schachtel suggests that in the process of this metamorphosis many adults become perceptually closed to the world by passing into a stage of secondary embeddedness which stifles their awareness of the world around them. He defines creativity as the ". . . art of seeing the familiar fully in its inexhaustible being, without using it autocentrically for purposes of remaining embedded in it and reassured by it (p. 184)." He suggests that man has the ability to remain perceptually open to the world and that he is motivated to do so in terms of White's (1959) theory of competence, because he has a need to relate to the world around him.

Maslow (1968) distinguishes between "special talent creativeness" and "self-actualizing (SA) creativeness". He suggests that an essential aspect of SA creativeness is a special kind of perception, and claims that ". . . such people can see the fresh, the raw, the concrete, the idiographic, as well as the generic, the abstract, the rubricized, the categorized and the classified (p. 137)."

Maslow focuses on the interaction of the creative person with his environment as a constructive, synthesizing, unifying and interpretive process, which depends in part on the inner integration of the person. Anderson (1965) stresses this process too, but differs from Maslow in that he suggests that creativity is not found in the person as such, but in his interaction with the environment. Maslow's more total concept of creativity stresses the personality rather than the achievements of the person. He suggests that self-acceptance allows more of the person's availability for enjoyment and for creative purposes (since less time

and energy are spent protecting the person from himself).

Rogers (1962) also talks of an interaction process and suggests that ". . . the product is not the individual, nor his materials, but partakes of the relationship between the two (p. 65)." He defines the creative process as: ". . . the emergence in action of a novel relational product, growing out of the uniqueness of the individual on the one hand, and the materials, events, people, or circumstances of his life on the other (Rogers, 1962, p. 65)."

A further definitional aspect of creativity is novelty. Bruner (1963) says that creative thinking ". . . consists of an ordering of elements in such a way that one sees relationships that were not evident before, groupings that were before not present, ways of putting things together not within reach (p. 5)."

Henle (1963) concludes that whereas the creative process need not be novel, nor a novel process creative, nevertheless it is almost impossible to ignore novelty in any definition which attempts to fully embrace the nature of creativity:

> . . . the creative solution, the creative idea is one which the individual achieves by freeing himself from his own conceptual system, and by which he sees in a deeper and more comprehensive or clearer way the structure of the situation which he is trying to understand. (Henle, 1963, p. 35)

Henle feels that novelty is relative to the individual and his conceptual system. He discusses the creative process in terms of dealing with ideas and problems outside of rigidly held preconceptions. His definition of novelty permits a far broader interpretation than does ascribing the novelty to the product, in terms of uniqueness and originality.

Dellas and Gaier (1970), in a comprehensive review of the current

literature, suggest that the major research problem having to do with the nature of creativity is the absence of an ultimate criterion. They conclude that a change in the dynamics of creativity research is warranted and suggest that: "If some small number of parameters can be isolated and defined in behavioral terms, great use of this might be mobilized for identifying creative potential (Dellas & Gaier, 1970, p. 68)." Dellas and Gaier support the current trend in research toward a focus on personality variables as possible predictors of creative potential. They feel that:

> . . . a particular constellation of psychological traits emerges consistently in the creative individual, and forms a recognizable schema of the creative personality. This schema indicates that creative persons are distinguished more by interests, attitudes and drives, than by intellectual abilities. (p. 68)

The move away from cognitive measures of creativity is supported by MacKinnon (1962), who defines creativity as ". . . a process extended in time and characterized by originality, adaptiveness and realization (p. 485)." He suggests that creativity tests:

> . . . fail to reveal the extent to which the subject faced with real life problems is likely to come up with solutions that are novel and adaptive and which he will be motivated to apply in all their manifestations. (p. 485)

MacKinnon's research is mainly based upon adult male subjects, who have achieved recognized acts of creativity, and who were nominated from within their own field of expertise. By running a battery of tests on his creative subjects (including the CPI, the MMPI and the Allport-Vernon-Lindzey Study of Values), MacKinnon attempted to differentiate between them and others in the same field who were not nominated. He found that distinctive personality differences existed between the two groups:

> The more creative a person is the more he reveals an openness to his own feelings and emotions, a sensitive intellect and understanding self-awareness, and wide-ranging interests including many which in the American culture are thought of as feminine. (MacKinnon, 1962, p. 488)

Dellas and Gaier in their 1970 review of the literature noted that the focus of the current research seems to be mainly on the following two topics: (1) Is creativity independent of intelligence? (2) Is personality, per se, a vital aspect of creativity?

Without necessarily denying the cognitive characteristics of creativity, and the question of correlation between intelligence and creativity, there is considerable notice being taken of ". . . what motivates individuals . . . and needs, interests and attitudes that help the individuals to be productive creatively (Guilford, 1967a, p. 12)."

Bloom (1963) concluded rather reluctantly that ". . . personality and motivational factors are at least as important as aptitude in determining performance (p. 252)."

The most provocative concepts regarding personality characteristics of the creative individual are those derived from the studies of the eminent and well-established, which have been carried out at the Institute for Personality Assessment and Research, in California, under the leadership of Donald MacKinnon and Frank Barron. Using subjects from such diverse fields as architecture, mathematics, industrial research, physical science, creative writing, engineering, etc., they found that typical personality characteristics emerging for the creative individuals were: self-confident, aggressive, flexible, self-accepting, little concerned with social restraints or others' opinions, and strongly motivated to achieve primarily in those situations where

independent thought and action, rather than conformity, were recognized (MacKinnon, 1961).

Similar findings using eminent creative adults in a wide variety of fields (mathematicians, creative writers, musicians, psychologists, research scientists, etc.), and using a wide range of instruments (Rorschach, TAT, Szondi test, Cattell Personality Factor test, etc.), have been reported (Barron, 1963a; Cattell & Drevdahl, 1955; Cross, Cattell & Butcher, 1967; Drevdahl & Cattell, 1958; Helson, 1961; Roe, 1952; Stein, 1956).

Despite certain research limitations such as small sample size, predominance of male subjects, testing by mail, differing creative criteria used for nominations (Dellas & Gaier, 1970), there seems to be overwhelming evidence to support the identification of creativity on the basis of personality variables.

A further dimension of this research is to determine whether or not the personality differences found in eminent adults are similar to those of young creatives. Studies with undergraduates (Drevdahl, 1956; Garwood, 1964; Rees & Goldman, 1961), high school adolescents (Cashdan & Welsh, 1966; Getzels & Jackson, 1962; Holland, 1961; Littlejohn, 1966; Parloff & Datta, 1966) and elementary school children (Torrance, 1962; Weisberg & Springer, 1967) revealed that highly creative students have similar, but less clearly defined, personality structures to those of recognized creative adults. An interesting suggestion by Dellas and Gaier (1970) is that the personality factors identified in young creatives may be valid predictors of later creativity: "Their manifestation at this level suggests that these characteristics may be determinants of creative performance rather than traits developed in

response to recognition of creative behavior (p. 66)."

Since objective tests of intellectual skills have failed to identify those students who favor a creative approach, one line of inquiry has been to employ teacher, peer and self ratings to identify the highly creative student. Various studies (Drevdahl, 1956; Getzels & Jackson, 1962; Holland, 1961; Rees & Goldman, 1961; Torrance, 1962, 1964) based upon creativity ratings found that the creative students could be isolated psychologically in terms of definite behavioral and personality differences.

Creativity is a much-researched topic and a much-discussed quality in the field of education. However, it would appear that lack of conceptual clarity is a major drawback to progress into the nature of creativity. Crockenberg (1972) discusses this problem and its effects. She feels that conceptual clarity between psychologists could be resolved by simply defining the domain in terms of an operational definition. However, she stresses a more important aspect:

> . . . when psychologists write about creativity they speak to an audience considerably more diverse than that of fellow psychologists. And it is this audience, made up of educators, parents and interested laymen, that is likely to impose the prevalent conceptual meaning of creativity on what was meant to be a narrow operational measure. (1972, p. 40)

An even greater problem is that misinterpretation (of a narrow operational definition) can lead to the unjustified institution of programs and selection and evaluation of students. Whereas research into the nature of creativity is in itself harmless, the application of creativity test results, and the subsequent labelling of students as "creative or non-creative", seems questionable in view of the existing discrepancies.

Dellas and Gaier (1970) suggest that further research into the use of ratings as creativity identifiers and predictors is definitely warranted. Indeed, they deplore the lack of replication and follow-up studies in the area of creativity, pointing out that the one-shot research study is becoming more and more typical. The lack of status or originality associated with replication and follow-up studies makes them an unpopular form of research and yet they can be of major import in assessing reliability of results, contributing both to their validity and generalizability.

Statement of the Problem

The present study will focus on the following questions, all of which require further clarification:

1. This study employs teacher and peer ratings as a means of selecting creative students for research purposes. How much inter- and intra-group consensus is obtained?
2. Is an Adjective Check List a potentially useful method of obtaining consensus opinion, such as for the selection of creativity criteria? How much consensus is obtained between teacher and student check lists and to what extent do they agree with published creativity scales obtained in a similar way? (See Domino, 1970; Smith & Schaefer, 1969; Yarnell, 1971.)
3. Do the personality profiles of those students identified as highly creative through pooled ratings procedures differ from others in their group? Are there personality variables which uniquely distinguish "creative high school students" from their less creative peers?

As this is an exploratory study into an area in which there is considerable disagreement and in which conceptual clarity is one of the greatest problems, no hypotheses are being put forward.

Nevertheless, it is hoped that the present study will clarify rather than confuse, some of the issues pertaining to the identification of creative high school students. Conceivably, personality profiles might be used as one method of identifying creative students, in an attempt to encourage creativity as a valid approach to learning. If creative students do differ radically (in terms of personality variables) from other students, it is likely that they might also function better in a different learning environment, or through a different educational approach.

CHAPTER II

METHOD

Subjects

The student population for this study was composed of 259 Grade XI and XII students. These students represented 10 classes, from four Edmonton Public high schools. Grade XI and XII high school students were chosen as representing the most mature student population, whose personality traits should be fairly well established, and yet whose identification was not likely to be based entirely upon established creative acts (as when recognized creative adults are used as subjects).

The four participating schools in this study were: Eastglen, Queen Elizabeth, Bonnie Doon, and M. E. LaZerte. The co-operating principals were asked to provide a variety of classes for the sample. The researcher preferred not to use classes in the commonly termed "creative subjects", such as art, music and drama, feeling that the selection of creative students in these courses would be strongly influenced by specific talents in these fields. The final sample was composed of classes in: Biology, English Language, English Literature, Mathematics, Social Studies, and Psychology.

The teachers of the 10 classes were also used in this study. There were 10 teachers in all, with one teacher being common to two of the classes (at M. E. LaZerte), and another class being a team teaching situation with two teachers (at Bonnie Doon). To increase the number of teachers in the sample, two University of Alberta Evening Credit classes (Educational Psychology 411 and 469), both composed largely of educators, took part in the study. The Evening Credit classes provided 43 and 22

subjects respectively, bringing the total teacher sample to 75.

Teacher Data

The teachers were informed that they were taking part in a study which was attempting to identify creative students. They were first asked to complete the open-ended sentence: "A creative student is . . .", expounding their own concept of creativity rather than giving a dictionary definition (see Appendix A for the questionnaire used).

The teachers were also asked to choose those adjectives from an Adjective Check List (ACL) which were synonymous with their personal concept of creativity. The ACL contains 300 adjectives, and the subjects were advised to check as many, or as few, adjectives as they wished, in accordance with their own concept of the term "creativity". A copy of the ACL can be found in Appendix A.

Finally, the teachers of the 10 classes in the present study were asked to identify the 10 most, and the 10 least, creative students in their own class (see Appendix B). They were requested to make this selection on the basis of their previously stated criteria (both the ACL and the open-ended definition). It was explained that the number 10 was merely a guideline, and that meaningless selections should not be made in order to fulfill this quota. It was stressed that if only two or three students in the class fitted their concept of either, or both, categories, that only those few students should be listed.

Gough and Heilbrun (1965) suggest that the ACL can be used either to elicit self-descriptions, or to elicit responses to imposed concepts, ideals, descriptions, etc. The ACL was originally designed as a technique for recording the observations of staff members in personality assessments. It is now most commonly used in the area of self-reports.

In the selection of 300 adjectives for the ACL, an effort was made to include a wide range of human behaviors and theoretical positions. As such, the ACL is a simple, systematic, and comprehensive method of obtaining data. Gough and Heilbrun's recommended procedure for analyzing composite reports (as were obtained in this study) is to consider adjectives checked by one-third or more of the observers as being "present" on the composite.

Smith and Schaefer (1969) used the ACL to develop a Creativity (Cr) Scale, using 800 high school students in the New York metropolitan area. Initially, they developed an 8-item Cr Scale, by selecting only those adjectives significant at the .20 level or better on all four of their comparison groups. A second scale was constructed by including all adjectives significant at or beyond the .20 level in three of the four comparisons. This second scale included 27 adjectives and was found to be successful in discriminating between creative and control subjects across both sexes and diverse specialty fields: "The results of this study revealed that scores obtained on ACL creativity scales developed on an initial sample of adolescents yielded significant differences between creative and control adolescents in a cross-validation sample (Smith & Schaefer, 1969, p. 92." They concluded that there are a number of rather basic traits and abilities that are essential components of creative achievement regardless of sex or specialty field.

Domino (1970) also attempted to develop and cross-validate a Cr Scale from the ACL, using Liberal Arts College students as his initial subjects. He obtained 68 items which statistically differentiated his creative and control groups at the .05 level or better. Fifty-nine adjectives were more frequently checked to describe the creatives, nine

items more frequently checked to describe the controls. This 59-item scale was cross-validated against Schaefer's (1967) study, and all comparisons found to be statistically significant (Domino, 1970, p. 50).

Yarnell (1971), in a review of Cr Scales formed by Smith and Schaefer (1969) and Domino (1970), found that there were 28 ACL adjectives which were common to at least two of the scales and which, when selected, were indicative of creativity. Seven of these adjectives were common to all three scales (Yarnell, 1971, p. 466)(see Table I).

Peer Data

The students were similarly informed that they were taking part in a study which was attempting to identify the nature of creativity. They, too, were first asked to complete the same sentence as the teachers: "A creative student is . . .", in accordance with their personal understanding of the term "creative".

The students were asked to check those adjectives from the ACL which were synonymous with their personal concept of creativity. As with the teachers, the students were encouraged to check as many, or as few, adjectives as they wished. Students were encouraged to work independently, and not discuss or compare their selections with other students. It was pointed out that the researcher was looking for individual definitions of creativity, in order to compile group definitions.

Each class of students was also asked to identify the 10 most, and the 10 least, creative students in their class. They were also requested to make their selections on the basis of their previously stated criteria, bearing in mind that 10 was merely a tentative guideline and should not affect their selection criteria.

TABLE I

A Common Item Creativity Scale
for the Adjective Check List[1]

28-item Cr Scale*	7-item Cr Scale**
adventurous	clever
aloof	complicated
artistic	cynical
assertive	imaginative
clever	original
complicated	reflective
cynical	unconventional
disorderly	
dissatisfied	
egotistical	
idealistic	
imaginative	
impulsive	
individualistic	
ingenious	
insightful	
intelligent	
inventive	
original	
outspoken	
quick	
rebellious	
reflective	
resourceful	
restless	
sharp-witted	
spontaneous	
unconventional	

[1]The scales were compiled by Yarnell, from his (1971) review of published ACL Cr Scales.

*Common to at least 2 of the 3 scales reviewed
**Common to all 3 scales reviewed

Individual Student Data

The students were administered the High School Personality Questionnaire (Cattell, 1968, HSPQ Form A, revised edition), a copy of which is to be found in Appendix C. The HSPQ is designed to measure a set of 14 independent dimensions of personality as outlined in Table II. The HSPQ has been planned and based on extensive research to measure psychologically important traits of "proved functional unity". The instrument is designed to give the "maximum information in the shortest time about the greatest number of dimensions of personality". Moreover, these 14 dimensions, which have been well confirmed in various experiments (Cattell, 1959; Cattell & Coan, 1959; Cattell & Gruen, 1954; Coan & Cattell, 1958), cover most research-demonstrated dimensions of personality (Cattell, 1962).

Application of the Design

This study was exploratory in nature, and a non-statistical approach was used to analyze much of the data obtained. The open-ended sentence completion, the ACLs, and the peer rating data were all analyzed through pooling information and looking for trends and differences. The HSPQ data was given a statistical treatment.

The ACL creativity ratings of teachers and students were analyzed (both as two separate groups and as one composite group) in order to determine those adjectives which were consistently checked as being synonymous with the concept of creativity. The Gough and Heilbrun (1965) recommendation of using those adjectives checked by one-third of the observers as "present" was taken as a tentative guideline. However, the writer found it more useful to consider instead the first 50 ranked adjectives for each Cr Scale formed (student, teacher, and combined Cr

TABLE II

Titles and Symbols for Designating the 14 Personality Factors on Cattell's HSPQ

	Low Score Description	Alphabetical Designation of Factor	High Score Description
Professional Term Popular Terms	(A-) Sizothymia Reserved, detached, critical, aloof, stiff	A	Affectothymia (A+) Warmhearted, outgoing, easygoing, participating
Professional Popular	(B-) Low intelligence (crystallized, power measure) Dull	B	High intelligence (crystallized, power measure) (B+) Bright
Professional Popular	(C-) Lower ego strength Affected by feelings, emotionally less stable, easily upset, changeable	C	Higher ego strength (C+) Emotionally stable, mature, faces reality, calm
Professional Popular	(D-) Phlegmatic temperament Undemonstrative, deliberate, inactive, stodgy	D	Excitability (D+) Excitable, impatient, demanding, overactive, unrestrained
Professional Popular	(E-) Submissiveness Obedient, mild, easily led, docile, accommodating	E	Dominance (E+) Assertive, aggressive, competitive, stubborn
Professional Popular	(F-) Desurgency Sober, taciturn, serious	F	Surgency (F+) Enthusiastic, heedless, happy-go-lucky

TABLE II (continued)

	Low Score Description	Alphabetical Designation of Factor	High Score Description	
Professional Term Popular Terms	(G-) Weaker superego strength Disregards rules, expedient	G	Stronger superego strength Conscientious, persistent, moralistic, staid	(G+)
Professional Popular	(H-) Threctia Shy, timid, threat-sensitive	H	Parmia Adventurous, "thick-skinned", socially bold	(H+)
Professional Popular	(I-) Harria Tough-minded, rejects illusions	I	Premsia Tender-minded, sensitive, dependent, overprotected	(I+)
Professional Popular	(J-) Zeppia Zestful, liking group action	J	Coasthenia Circumspect, individualism, reflective, internally restrained	(J+)
Professional Popular	(O-) Untroubled adequacy Self-assured, placid, secure, complacent, serene	O	Guilt proneness Apprehensive, self-reproaching, insecure, worrying, troubled	(O+)
Professional Popular	(Q_2-) Group dependency Sociably group dependent, a "joiner" and sound follower	Q_2	Self-sufficiency Self-sufficient, resourceful, prefers own decisions	(Q_2+)

TABLE II (continued)

	Low Score Description	Alphabetical Designation of Factor	High Score Description	
Professional Term (Q_3-) Popular terms	Low self-sentiment integration Uncontrolled, lax, follows own urges, careless of social rules	Q_3	High strength of self-sentiment Controlled, exacting will power, socially precise, compulsive, following self-image	(Q_3+)
Professional (Q_4-) Popular	Low ergic tension Relaxed, tranquil, torpid, unfrustrated, composed	Q_4	High ergic tension Tense, driven, overwrought, fretful	(Q_4+)

Scales).

Comparisons were made between student and teacher Cr Scales, and these were then pooled to form a Combined Cr Scale of 50 adjectives. This Combined Cr Scale was compared with the Smith and Schaefer (1969) and Domino (1970) scales, and similarities were noted. Finally a Cr Scale was formed of those adjectives common to at least three of the comparison scales (Combined Cr Scale, Smith and Schaefer's 8-item and 27-item Cr Scales, and Domino's 59-item Cr Scale). This final Cr Scale was compared with Yarnell's (1971) composite Cr Scale, and similarities again noted.

Students were rank ordered in terms of the number of times they were identified by peers as creative, and the top and bottom third respectively were assigned to two discrete categories (HC and LC). These students were then compared with the teacher rating for creativity in their class, and two groups were formed of only those students for whom a student-teacher consensus vote was obtained. These final groups were combined for all 10 classes, to form two discrete groups of High Creatives and Low Creatives.

The HSPQ results of these two groups were analyzed statistically. An analysis of variance was used to compare the mean differences between the two groups, on the 14 personality factors in the HSPQ. A linear discriminant function was also performed in order to maximize group mean differences and to obtain scaled weightings for the 14 personality factors.

The data obtained by discriminating between the HC and LC groups was graphically plotted on a personality profile, as illustrated by Cattell (1962, pp. 19-21). Thus, a graphic illustration of the

similarities and differences observed between the two groups was obtained.

The open-ended sentences which were completed to give a definition of creativity by students and teachers were analyzed non-statistically. The writer looked for trends in definition, and summarized the results into four major groupings.

The writer offered no hypotheses in this study which was designed to be exploratory in nature. However, an attempt was made to focus on the following problems:

1. The identification of criterion adjectives used to describe the creative student.
2. The identification of students who are unanimously selected by others as being creative.
3. The identification of personality variables found consistently in those students who are selected as being creative.

It was also hoped that the results would answer the following questions:

1. (a) Are there descriptive adjectives which are consistently chosen as criteria in the identification of creative students?
   (b) How much agreement is there between teacher and peer criterion adjectives, and to what extent do they jointly agree with published Creativity Scales?
2. (a) Are there personality variables which distinguish those students who are unanimously identified as being creative by teacher and peer ratings?
   (b) If there are such personality differences, what are they, and to what extent are they significant (in terms of personality profiles)?

CHAPTER III

RESULTS

Criterion Adjectives for "Creativity"

The Adjective Check List (ACL) was used to obtain creativity criteria from students and teachers. Both groups were requested to check as many, or as few, of the 300 ACL adjectives as they desired according to their personal concept of the term "creativity". A comparison of Creativity (Cr) Scales based on frequency of check-offs by students, teachers, and their combined ratings is shown in Table III.

The Gough and Heilbrun (1965) recommendation of including on a composite scale (such as the concept of creativity) only those adjectives checked by one-third of the observers as relevant to the specific concept was modified in this investigation. Instead, both the student Cr scale and the teacher Cr scale were formed by rank ordering the 50 adjectives selected most frequently by each group. The combined student-teacher Cr scale similarly was a rank ordering of the 50 adjectives selected most frequently when student and teacher tallies were combined. The first 50 adjectives in the combined Cr scale were mostly common to the first 50 adjectives in both teacher and student Cr scales. This high degree of consensus suggested that the first 50 ranked adjectives of the combined Cr scale were worthy of further consideration as being commonly used to describe "creativity".

As can be seen in Table III, considerable consensus was obtained within the first 10 adjectives, with 7 out of 10 in the combined group being common to both students and teachers. Of the first 20 adjectives selected by the combined group, 13 were common to both groups. Of the first 50 adjectives selected by the combined group, 35 were common to

Table III

Comparison of First 50 Adjectives Selected to Define Creativity by Students and Teachers[1]

Students (N = 259)	Teachers (N = 75)	Combined Group (N = 334)
artistic	imaginative	imaginative***
imaginative	adventurous	artistic***
ambitious	alert	alert***
interests wide	enthusiastic	interests wide***
alert	artistic	active***
active	active	adventurous***
capable	interests wide	ambitious*
clear-thinking	adaptable	enthusiastic***
adventurous	inventive	capable**
enthusiastic	individualistic	clear-thinking*
determined	curious	individualistic**
confident	original	confident*
individualistic	energetic	determined*
appreciative	capable	curious**
curious	resourceful	adaptable**
clever	enterprising	appreciative**
adaptable	sensitive	original**
intelligent	initiative	clever*
honest	appreciative	intelligent*
original	versatile	inventive*
friendly	intelligent	changeable*
changeable	daring	energetic*
natural	clever	friendly*
inventive	confident	honest
dependable	clear-thinking	sensitive*
energetic	ambitious	daring*
thoughtful	changeable	independent*
calm	independent	natural
easy-going	self-confident	resourceful*
sensitive	spontaneous	thoughtful*

[1]Adjectives are presented in rank order in all three scales.

*Checked by both students and teachers as being in the first 50
**Checked by both students and teachers as being in the first 20
***Checked by both students and teachers as being in the first 10

Table III (continued)

Students (N = 259)	Teachers (N = 75)	Combined Group (N = 334)
daring	ingenious	versatile*
independent	determined	industrious*
realistic	insightful	dependable
sociable	unconventional	self-confident*
industrious	industrious	easy-going
logical	progressive	excitable*
good-natured	conscientious	idealistic*
idealistic	excitable	sociable
sincere	friendly	sincere
responsible	foresighted	calm
excitable	thoughtful	persistent*
resourceful	impulsive	realistic
reliable	persistent	logical
reasonable	emotional	enterprising
versatile	idealistic	cheerful*
understanding	cheerful	emotional
persistent	optimistic	good-natured
cheerful	frank	conscientious
helpful	complicated	reliable
self-confident	courageous	responsible

both groups. As previously stated, it can be seen that consensus diminishes with ranked order of selection.

The 7 adjectives selected by consensus within the first 10 chosen were: imaginative, artistic, alert, interests wide, active, adventurous, and enthusiastic (in rank order). It appears that both students and teachers regard these 7 characteristics as being closely linked to creativity. The 6 additional adjectives checked by both groups as being in the first 20 were: capable, individualistic, curious, adaptable, appreciative, and original.

In Table IV the Cr scale formed by the combined ACLs of teachers and students is compared with published Cr scales formed from the ACL. The Combined Cr scale (50-item) is compared with the Smith and Schaefer (1969) Cr scales (27-item and 8-item), and also with Domino's (1970) 59-item scale. The Combined Cr scale is presented in alphabetical (rather than ranked) order to permit easier comparison, since all published scales used are listed alphabetically.

Four adjectives--artistic, imaginative, original, and resourceful--appear on all of the Cr scales in the comparison. The next four adjectives--clever, idealistic, intelligent, and inventive--were common to three of the Cr scales, but did not appear on Smith and Schaefer's short 8-item scale. It seems likely that these 8 characteristics are very consistently linked to the concept of creativity by various groups of people, and could be reasonably isolated, therefore, as definitive criteria.

Eighteen other adjectives were found to be included in two of the Cr scales. Twenty-six adjectives (those common to two or more of the comparison Cr scales) were combined to form a composite Cr scale, and

Table IV

Comparison of Combined Teacher-Student Creativity (Cr) Scale with Published Creativity Scales Formed from the Adjective Check List

Combined Cr Scale (Teachers & Students)[1]	Domino (1970) Cr Scale (59-item)	Smith & Schaefer (1969) Cr Scale (27-item)	Smith & Schaefer (1969) Cr Scale (8-item)
active*	absent-minded	artistic***	artistic***
adaptable*	active*	assertive	imaginative***
adventurous*	adaptable*	clever**	original***
alert*	adventurous*	complicated	progressive
ambitious*	alert*	co-operative	quick
appreciative	aloof	cynical	resourceful***
artistic***	ambitious*	foolish	sharp-witted
calm	argumentative	idealistic**	spontaneous
capable*	artistic***	imaginative**	
changeable	assertive	impulsive	
cheerful	autocratic	ingenious	
clear-thinking*	capable*	insightful	
clever**	careless	intelligent**	
confident*	clear-thinking*	inventive**	
conscientious	clever**	original***	
curious*	complicated	peculiar	
daring	confident*	progressive	
dependable	curious*	quick	
determined	cynical	reflective	
easy-going	demanding	resourceful***	
emotional	disorderly	sharp-witted	
energetic*	dissatisfied	spontaneous	
enterprising	distractible	stolid	
enthusiastic*	egotistical	strong	
excitable	energetic*	talkative	
friendly	enthusiastic*	unconventional	
good-natured	humorous	versatile*	
honest	hurried		
idealistic**	idealistic**		
imaginative***	imaginative***		

[1]Combined Cr Scale presented in alphabetical order, not order of selection.

*Adjective common to Combined Cr Scale and one other scale
**Adjective common to Combined Cr Scale and two other scales
***Adjective common to Combined Cr Scale and other three scales

Table IV (continued)

Combined Cr Scale (Teachers & Students)[1]	Domino (1970) Cr Scale (59-item)	Smith & Schaefer (1969) Cr Scale (27-item)	Smith & Schaefer (1969) Cr Scale (8-item)
independent*	impulsive		
individualistic*	independent*		
industrious*	individualistic*		
intelligent**	industrious*		
interests wide*	ingenious		
inventive**	insightful		
logical*	intelligent**		
natural	interests wide*		
original***	intolerant		
persistent	inventive**		
realistic	logical*		
reliable	moody		
resourceful***	original***		
responsible	outspoken		
self-confident	quick		
sensitive*	rational		
sincere	rebellious		
sociable	reflective		
thoughtful	reserved		
versatile*	resourceful***		
	restless		
	sarcastic		
	self-centered		
	sensitive*		
	serious		
	sharp-witted		
	spontaneous		
	tactless		
	unconventional		

compared with Yarnell's (1971) 28-item scale (see Table V).

The two Cr scales in Table V contain 44 adjectives which appear to be very closely linked to a common definition of creativity. These adjectives have been consistently chosen by different samples, researched independently, and separated by time and place. Ten adjectives are common to both Cr scales in Table V. These adjectives are: adventurous, artistic, clever, idealistic, imaginative, individualistic, intelligent, inventive, original, and resourceful. It would seem valid to suggest that these 10 adjectives could be identified as criterion adjectives commonly used to describe creativity and the creative student.

High and Low Creative Groups

Table VI contains a comparison of peer and teacher ratings of creative students, for each of the 10 classes in the sample. The scores indicate the number of students rated as High Creatives (HC) and as Low Creatives (LC), within each class. Student selections were based upon composite ratings. Students were asked to rate other students in their class as HC or LC. Student ratings were tabulated, and rank ordered for each class in terms of level of creativity (+, 0 or -). Each class was divided into three (approximately equal) groups, according to where natural breaks occurred in the ratings. The two discrete groups (HC and LC) were formed by those students falling into the groups at either end of the Cr scale. Teacher ratings refer only to the individual class teacher, with the exception of Class 6, which represents the combined ratings of two teachers. Class 6 was a team teaching situation (with two teachers), but for all other purposes was considered as one large class by the researcher. The final groups of

Table V

Comparison of Composite 26-Item Cr Scale
with Yarnell's (1971) Combined 28-Item Cr Scale

Composite Scale (26-item)	Yarnell's Combined Scale (28-item)
active	adventurous*
adaptable	aloof
adventurous*	artistic*
alert	assertive
ambitious	clever*
artistic*	complicated
capable	cynical
clear-thinking	disorderly
clever*	dissatisfied
confident	egotistical
curious	idealistic*
energetic	imaginative*
enthusiastic	impulsive
idealistic*	individualistic*
imaginative*	ingenious
independent	insightful
individualistic*	intelligent*
industrious	inventive*
intelligent*	original*
interests wide	outspoken
inventive*	quick
logical	rebellious
original*	reflective
resourceful*	resourceful*
sensitive	restless
versatile	sharp-witted
	spontaneous
	unconventional

Note: Adjectives listed alphabetically, not in rank order, for both scales.

*Adjectives common to both scales

Table VI

Comparisons of Peer and Teacher Ratings
of Creative Students

Class	N	No. Selected by Peers		No. Selected by Teacher		No. Selected by Consensus	
		HC*	LC**	HC	LC	HC	LC
1	28	10	9	7	3	4	2
2	30	10	10	6	4	5	3
3	25	8	9	6	4	4	4
4	25	9	7	6	6	2	2
5	26	10	9	8	7	3	3
6[1]	38	10	12	6	4	3	4
7	18	4	3	5	3	4	0
8	27	9	8	2	1	1	0
9	27	6	8	7	5	4	4
10	26	9	8	9	6	6	6

[1]Class 6 was rated by two teachers. Teacher selection represents their combined ratings.

*HC = High Creative
**LC = Low Creative

students, selected by consensus by peers and teacher, were combined from all 10 classes to form the two discrete groups of High Creatives and Low Creatives (36 HC and 28 LC).

An examination of class ratings indicated considerable agreement between teachers and students in selecting the top one or two students in each category. Those students who were rated very consistently by their peers (either as HC or LC) also tended to be isolated by their teachers. Lack of consensus generally occurred in the rating of those students for whom there was also disagreement amongst peer ratings.

Some exceptions to these trends were noted. In Class 5 two students were convincingly selected as High Creatives by their peers. Of these two students, one was not rated by the teacher, while the other was rated as a Low Creative. Class 8 received only three ratings by the teacher (two HC and one LC). Of these three, only one rating was in agreement with the student ratings. However, this rating was of a student who was also highly ranked by his peers. Of the other two ratings, one was in direct opposition to the student rating (teacher rated HC where students rated LC), and the other was to rate as HC a student not ranked by his peers.

Personality Variables which Distinguish Creative Students

The two discrete groups of Low Creatives and High Creatives were analyzed in terms of personality differences, using Cattell's "High School Personality Questionnaire" (HSPQ). Table VII contains the results of an analysis of variance of the group means, according to Cattell's 14 Personality Factors (which are fully outlined in Table II, pp. 19-21). It can be seen that two factors differ significantly between Low and High Creatives. Factors H and I are significantly

Table VII

Results of Analysis of Variance
of High and Low Creative Group Means
According to Cattell's HSPQ

Dependent Variable	Group Means		MS_w (df = 61)	MS_b (df = 1)	F	P
Personality Factor	LC	HC				
A	9.32	10.23	12.82	12.79	.998	.322
B	8.11	8.86	3.75	8.75	2.330	.132
C	9.04	9.91	14.42	12.00	.833	.365
D	9.25	9.77	8.25	4.23	.513	.477
E	10.25	10.14	14.12	.18	.013	.910
F	9.82	10.34	13.34	4.23	.317	.576
G	10.68	10.83	10.35	.35	.034	.855
H	8.14	11.03	14.73	129.54	8.800	.004**
I	9.25	12.49	31.93	162.87	5.100	.028*
J	9.82	10.00	10.70	.50	.047	.830
O	9.32	7.77	12.99	37.37	2.880	.094
Q_2	10.04	10.49	14.29	3.15	.220	.640
Q_3	10.00	10.49	11.91	3.67	.308	.581
Q_4	9.68	10.60	10.47	13.21	1.260	.266

*P < .05
**P < .01

higher (at the .01 and .05 level respectively) for the HC group. Factor O indicates a fairly large difference (at the .1 level of significance), with High Creatives scoring considerably lower on this factor. The personality differences between high and low scores on factors H, I and O are represented in Tables VIII, IX and X.

Table VIII

Characteristic Expressions of Factor H

Low Score Threctia,* H-	versus	High Score Parmia,** H+
Shy, withdrawn	vs	Adventurous, likes meeting people
Retiring in face of opposite sex	vs	Active, overt interest in opposite sex
Emotionally cautious	vs	Responsive, genial
Apt to be embittered	vs	Friendly
Restrained, rule-bound	vs	Impulsive
Restricted interests	vs	Emotional and artistic interests
Careful, considerate, quick to see dangers	vs	Carefree, does not see danger signals

*Shy, timid, restrained, threat-sensitive
**Adventurous, "thick-skinned", socially bold

The personality differences between High and Low Creatives are depicted graphically in Figure 1. The significant differences between factors H and I for the two groups are clearly illustrated in this figure. The fairly large discrepancy between the groups on factor O can also be seen in this graph.

A cursory glance at Tables VIII and IX suggests considerable contradiction in the combination of H+ and I+ factors. The High

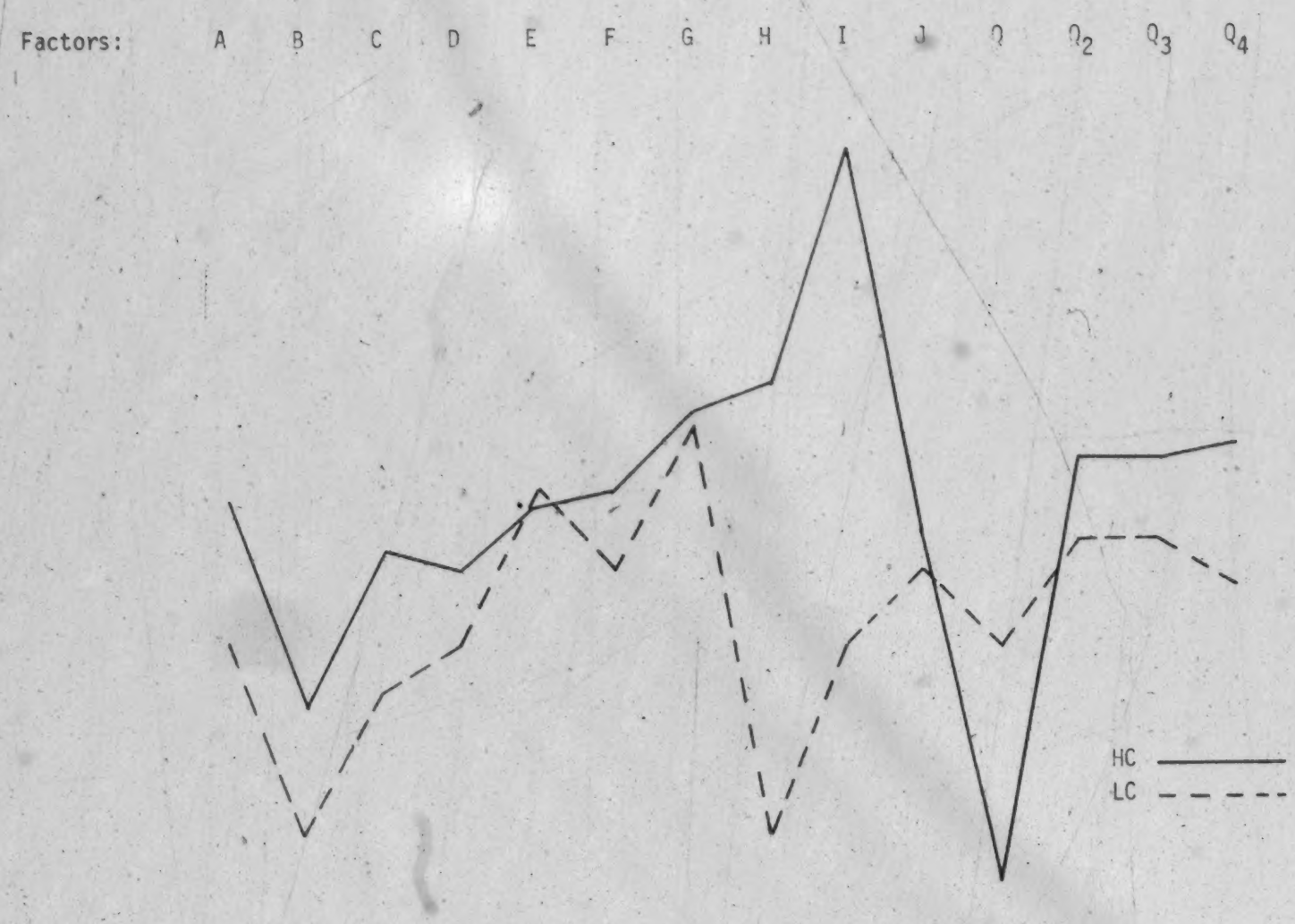

Figure 1. Personality Profile Comparison of High Creatives and Low Creatives

Table IX

Characteristic Expressions of Factor I

Low Score Harria,* I-	versus	High Score Premsia,** I+
Unsentimental, expects little	vs	Fidgety, expecting affection and attention
Self-reliant, taking responsibility	vs	Clinging, insecure, seeking help and sympathy
Hard (to point of cynicism)	vs	Kindly, gentle, indulgent to self and others
Few artistic responses (but not lacking in taste)	vs	Artistically fastidious, affected, theatrical
Unaffected by "fancies"	vs	Imaginative in inner life and in conversation
Acts on practical, logical evidence	vs	Acts on sensitive intuition
Keeps to the point	vs	Attention-seeking, flighty
Does not dwell on physical disabilities	vs	Hypochondrical, anxious about self

*Tough-minded, rejects illusions
**Tender-minded, sensitive, dependent, overprotected

Creative is revealed by factor H as an outgoing, adventurous, gregarious and carefree person, who responds to impulses and insights, and has artistic interests. Factor I illustrates the other side of the creative personality, through such traits as insecure, seeking affection and attention, gentle, indulgent, hypochondriacal and anxious, with an artistic and imaginative temperament. Thus, the High Creative profile appears to be complex in nature, combining both assertive and insecure characteristics into a personality which is both imaginative and sensitive, and also clinging and fidgety, yet capable of strength and determination in achieving desired goals. These diverse

Table X

Characteristic Expressions of Factor O

Low Score Untroubled Adequacy,* O-	versus	High Score Guilt Proneness,** O+
Self-confident	vs	Worrying, anxious
Cheerful, resilient	vs	Depressed, cries easily
Impenitent, placid	vs	Easily touched, overcome by moods
Expedient, insensitive to people's approval or disapproval	vs	Strong sense of obligation, sensitive to people's approval or disapproval
Does not care	vs	Scrupulous, fussy
Rudely vigorous	vs	Hypochondriacal and inadequate
No fears	vs	Phobic symptoms
Given to simple action	vs	Lonely, brooding

*Self-assured, placid, secure, complacent, serene
**Apprehensive, self-reproaching, insecure, worrying, troubled

characteristics are not fully reflected in the 10 most commonly chosen ACL adjectives (see Table V, p. 31): adventurous, artistic, clever, idealistic, imaginative, individualistic, intelligent, inventive, original and resourceful. These 10 adjectives refer to exclusively positive characteristics, both in terms of common definition, and according to Gough and Heilbrun (1965, pp. 12-13). The more negative attributes of the HC personality, as revealed by factor I, are not accounted for by the ACL Cr scales formed by teachers and students in this study.

Table XI contains the results of the discriminant function analysis which was used to maximize the difference between the means of the HC and LC groups. It can be seen that factors H and I have very

Table XI

Results of Discriminant Function Analysis between the Means of High and Low Creatives on Cattell's HSPQ

Variable	Normalized Weights	Scaled Weights
A	-0.122	-3.414
B	0.345	5.220
C	0.047	1.393
D	0.390	8.740
E	0.138	4.056
F	-0.019	-0.553
G	-0.250	-6.298
H	0.540	16.190
I	0.425	18.771
J	0.077	1.974
O	-0.137	-3.865
Q_2	0.150	4.428
Q_3	-0.084	-2.274
Q_4	0.321	8.100

Discriminant Score	Group		F (df = 4.48)	p
	LC	HC		
Mean	15.81	19.63	2.715	.005
Variance	5.52	3.75		

high scaled weight values relative to the other 12 factors. These are the two important factors differentiating the HC and LC groups. Not only do these results verify the two factors (H and I) which were identified by the analysis of variance, but they also eliminate the borderline factor (O) as being of importance. On H and I factors the HC group score high, and the LC group score low. Using these scaled weights, an equation could be calculated to predict an individual's mean score on the HSPQ. The possible uses of this technique will be expanded and discussed in Chapter IV.

Table XI also illustrates that the combined mean difference between the two groups (HC and LC), using a linear discriminant function, is significant at the .005 level. These group mean differences could be used to categorize individual mean scores into HC or LC. This procedure would be of value in the technique mentioned in the previous paragraph.

Creativity Definitions

Both students and teachers were asked to complete the open-ended sentence: "A creative student is . . . ." The responses to this task were extremely varied, and consequently very difficult to tabulate. Some subjects ignored this task completely; others responded with a one word or short sentence answer; the majority (both students and teachers) wrote long and complex statements to explain their concept of "creativity" and the "creative student".

The writer noted a tendency for most responses to fall into one of four categories: 1. Imaginative; 2. Open-minded; 3. Positive self-concept; 4. Production of creative works. Responses were sorted into

one of these four groups, according to which one most fitted the definition given. A small group of responses failed to belong to any of these categories, and yet contained no essential ingredient for forming a fifth category. This miscellaneous group referred to a variety of characteristics, such as: intelligence, good humor, good nature, good looks, friendliness, good behavior, and other less specific attributes.

Of the four categories already mentioned, the largest group was that composed of responses alluding to imagination. These responses included: having original ideas, making novel combinations, being artistic and imaginative in dealing with ideas, and in general pertained to the ability of self-expression.

The second largest group dealt mainly with open-mindedness. Responses in this category defined the creative student as being individualistic, and included responses such as: welcomes new ideas, willing to change and adapt, able to see life openly, an independent thinker, a nonconformist, and a flexible person in ideas and attitudes.

The next category was concerned with the positive self-concept attributed to creative individuals. Responses included: knows where he's going; good awareness of goals; adventurous, determined; persistent; and in general the responses outlined the type of person who would stand out in a group as being self-motivated.

The last category, which was also the smallest, referred to creative production. This group very consistently defined creativity in terms of the created object, and frequently stated that creativity was mostly to be found in art, music, drama, and literature.

As noticed with the ACL ratings, subjects tended to define creativity in exclusively positive terms. The writer observed very few negative attributes equated with creativity; rather, creativity was defined as being extremely positive, and highly desirable.

It was originally intended to sort teacher and student definitions separately in order to make comparisons. However, the trends in definition were so similar that it was decided not to make this distinction.

Conclusion

The results of this study indicate that personality differences can be identified which distinguish between High Creatives and Low Creatives. Two personality factors on the HSPQ were found to differ significantly between HC and LC high school students. A linear discriminant function demonstrated a mean difference between the two groups on the HSPQ which was highly significant (.005 level). These findings support the use of personality assessment as a possible means of differentiating between HC and LC students. These findings, however, are by no means conclusive, and considerable follow-up and cross-validation would be required to justify the use of the HSPQ as an identifier or predictor of creative ability. Nevertheless, the results of the present study do support Personality Assessment as a valuable area of research into the nature of creativity.

CHAPTER IV

DISCUSSION

The results of this study support the conclusions of Dellas and Gaier (1970) that personality variables could be used as possible predictors of creative potential. Dellas and Gaier suggest that: ". . . creative persons are distinguished more by interests, attitudes and drives than by intellectual abilities (1970, p. 68)." The highly significant differences between the HC and LC groups on HSPQ personality factors H and I (see Table II, pp. 19-21) are indicative of differing interests, attitudes and drives. However, factor B (which delineates crystallized intelligence) only differs slightly between the two groups. It can be seen in Figure 1 (p. 36), as might be expected, that the HC group scores slightly higher on factor B, but the difference between the groups is not significant.

Examination of the verbal definitions of "a creative student" shows that personality differences are more often used as criteria than are specific talents or creative acts. It is interesting to note (pp. 40-42) that less than one-fifth of the total sample (teachers and students) defined creativity in terms of creative acts or special talents. High intelligence, which is commonly considered to be highly correlated with creativity, figured very low in definitional frequency. The largest proportion of definitions (those in the three main groups) related to personality characteristics. These definitions referred to: imagination, originality, open-mindedness, self-motivation, and awareness of goals. Such characteristics lie more in the realm of interests,

attitudes and drives, and do not appear to be directly related to intellectual ability.

This study used peer and teacher ratings to isolate two discrete groups of students--High Creatives and Low Creatives. Since these groups were arrived at by consensus between teacher and students within each class, it seems reasonable to assume that these two groups have distinct and recognizable differences. It is interesting to note, however, that these differences (as specified by ACL Cr scales) are only a partial reflection of the differences noted between the groups using the HSPQ data. Both teachers and students in this study tended to check exclusively positively-toned adjectives in describing creativity. The student, teacher and combined Cr scales were all formed from positive adjectives only, whereas it was noticed that published scales also included more negative terminology, such as: aloof, cynical, dissatisfied, egotistical, peculiar, rebellious, restless, tactless, etc.

The HSPQ data depicts the HC student as a fascinating combination of positive and negative elements. The apparent contradiction between factors H and I, when further examined, suggests a deeper, more personal conflict. While the HC student is commonly described as adventurous, outgoing, impulsive and carefree, with an imaginative and sensitive temperament, it is seldom suggested that he may also have a weak, anxious, clinging side to his personality. The combination of factors H+ and I+ (which account for the major differences between HC and LC groups) reveals the HC student as being assertive and yet insecure. The writer suggests that in order to pursue his original, and often unconventional, ideas and goals, the creative student may

have incurred disapproval, and even punishment, from his parents, teachers and peers. Creativity, it seems, can only be maintained and developed at some cost to personal security, since the values of the creative child are seldom in line with the teacher and peer group value systems. Torrance (1965) studied developmental patterns through elementary school. He noted that creative children acquire a reputation of having "silly" or "naughty" ideas. He found that by the end of the third grade they generally learned to be evasive and keep their thoughts to themselves. Getzels and Jackson's (1962) study with gifted children revealed that HC students were unpopular with their teachers. Getzels and Jackson concluded that the teachers' attitudes were largely determined by the nature of the creative students themselves--their nonconformist attitudes, values and aspirations.

The writer suggests that society tends to reward conformity and convergent thinking. Consequently, the HC student may be using his outward, assertive behavior to mask a basic insecurity. If the HC student frequently meets with disapproval and nonacceptance because of nonconformist, original, unusual and divergent ideas, then he is likely to have developed psychological defenses. The HC student may develop weak, anxious, clinging, attention-seeking and insecure feelings through his failure to gain the approval of others. This aspect of the creative individual is seldom recognized as being of importance. The creative personality is more commonly depicted in terms of the adventurous, outgoing, impulsive, artistic characteristics also observed in this study. Consideration of many famous, creative people, however, supports the dual nature of the creative personality. There are innumerable anecdotes attesting to the fact that some of our most

brilliant, imaginative and original writers, artists, musicians, etc. are petulant, demanding, intolerant of criticism, and often surround themselves with loyal followers.

The adjectives on the ACL most commonly used to describe creativity were: adventurous, artistic, clever, idealistic, imaginative, individualistic, intelligent, inventive, original and resourceful. These ACL results suggest that while both peers and teachers are aware of some of the personality differences which identify some students as being more creative than the norm, they are unaware of the total dynamics of the HC student. The positive side of the creative personality is supported by the adjectives chosen by students and teachers. However, the negative traits (as shown by factor I) were noticeably excluded by the subjects in this study as being part of their concept of creativity.

Implications for Educational Practice and Research

It has long been considered valid to distinguish between high and low IQ in educational settings, and frequently to establish different curricula or teaching methods accordingly. It might be useful to make a similar distinction between HC and LC students, in order to provide the learning environment most suited to each group. The writer suggests that the personality differences between HC and LC students are strongly influential upon their preferred cognitive style.

De Bono (1967) suggests that there are two distinct cognitive styles, or methods of problem solving--lateral and vertical thinking. He points out that: "Lateral thinking is not a new, magic formula but simply a different and more creative way of using the mind

(De Bono, 1967, p. 6)." Lateral thinking as a cognitive style seems more suited to the HC personality, since it draws upon the imaginative and open-minded characteristics previously identified. In contrast: "Vertical thinking has always been the only respectable type of thinking. In its ultimate form as logic it is the recommended ideal toward which all minds are urged to strive, no matter how far short they fall (De Bono, 1967, p. 13)." This latter cognitive style seems ideally suited to the practical, logical, rule-bound personality of the LC student.

De Bono's theory of lateral thinking reflects closely the manner in which highly creative persons work. Arasteh (1968) chose to examine the creative process of universally accepted creative individuals (e.g., Pasteur and Newton). He found that "the essential factor in creativity is not production, but the challenge of the assumption--that which is generally accepted as truth (p. 77)". This "challenge" is the first stage of the creative process mentioned by Schmidt: "encounter, commitment, engagement (1964, p. 52)". This commitment to the germ of an idea is the essence of the creative process, in that the highly creative person tends to view the task in which he is involved as a gestalt. The lesser creative person tends to work through problems in a linear fashion, rejecting extraneous material at each stage of the problem solving process, until he progresses to a systematic solution. This methodical and logical process is what De Bono terms vertical thinking. The highly creative person views a problem in its entirety (including possibly extraneous material), then goes through a period of "gestation" before arriving at an insightful solution. This method of

problem solving approximates De Bono's lateral thinking process.

Anderson (1965) suggests that in general our schools operate on a closed-system of learning, concerned with the memorizing of facts, formulas, and beliefs, and the acquiring and storing of information. Since practically all intelligence, attainment, and achievement tests measure closed-system performance, scholastic success is measured by conformity to the norms. This system perpetuates and rewards convergent thinking ability through compulsory courses, specific assignments, examinations and prizes. The vertical thinker, or LC student, is likely to function optimally within this educational system. This type of student, defined by Personality Factors H- and I- (see Tables VIII and IX, pp. 35 and 37), appears to enjoy guidelines and directions within his educational environment. The LC student (in terms of Factors H- and I-) is characterized as: restrained, rule-bound, emotionally cautious, careful, practical, logical, to the point, and having few artistic responses. It would appear that the closed-system of education favors the LC student, by providing the necessary guidelines and restrictions for him to optimally function.

Anderson (1965) suggests that a more propitious learning environment for the creative student is the personally open system. This system attempts to stimulate the student and accept his uniqueness by encouraging originality, experimentation, initiative, and invention. It incorporates such activities as class discussion, student projects, seminar groups, individual study, and student participation in classroom and curriculum planning. These activities seem likely to attract and interest the HC student, since they would allow him to develop and maximize his imaginative, original, adventurous, sensitive,

and open-minded personality characteristics, and would perhaps reduce some of his insecurity and personal anxieties as well. In order for the HC student to optimally function it seems necessary to provide him with an alternative to the traditional closed-system learning environment. A more flexible learning approach (as outlined in this paragraph) would appear to provide such an alternative.

In view of Anderson's suggestions, and in the opinion of the writer, it seems to be extremely important to be able to distinguish between HC and LC students. If students can be assessed according to their preferred cognitive style, and placed in the educational setting most suited to their personality needs, they will be more likely to develop to their maximum level of potential. Extremely gifted and talented students will often perform poorly in compulsory courses and traditional examinations, possibly due to their poor vertical thinking abilities. Barron points out that: ". . . much potential creativity is made to wither by an unfavorable climate both in the classroom and in society at large (1969, p. 125)."

The present study has focused on the identification of HC and LC students. Student and teacher ratings were used to isolate HC and LC groups in each class, and consensus was obtained in identifying 36 High Creatives and 28 Low Creatives out of a total sample of 259 students. Only those students selected by consensus were used, so that two very distinct groups could be analyzed for personality differences. The results obtained indicated significant differences between the HC and LC groups, supporting teacher and peer ratings as a valid method of identifying HC and LC students. However, ratings would be an impractical and unwieldy method of distinguishing between HC and

LC students throughout the school system. Contingencies such as: personality conflicts, best friends, appearance, behavior, intellectual abilities, etc. are likely to influence ratings to some degree. Also, this method of selection would be unnecessarily laborious and time-consuming. It seems, therefore, that a general method of distinguishing between HC and LC students would require an instrument which could be administered and scored as easily as a standardized intelligence test.

The HSPQ was used in this study to distinguish between HC and LC students (after they had been identified by ratings), and demonstrated significant differences between the groups. However, it is important to exercise caution in using these personality differences as predictors of creativity. In order to fully differentiate between the HC and LC groups for research purposes, two very extreme groups were selected. The fact that these two extreme groups do demonstrate significant personality differences is an important research finding. However, before this finding can be applied to a general predictive technique or screening device, it will be necessary to refine the instrument used in order to identify the creative level of students throughout the spectrum of creativity.

If the HSPQ were found to be an efficient instrument in differentiating between less extreme levels of creative potential and ability, it might be of value as a predictor of creativity as mentioned in Chapter III (p. 40). By weighting a student's Personality Factor scores on the HSPQ (using the scaled weights shown in Table XI), it might be possible to categorize him as HC or LC. The student's weighted mean score would be compared with the group mean scores to ascertain whether he most closely approximated the score for the HC or LC group.

The findings of this study support the current trend toward Personality Assessment in Creativity research and measurement. This is still a relatively new and unexplored area, and further research is definitely warranted. An interesting follow-up to the present study might be to examine alternative instruments to the HSPQ, as well as attempt to validate the HSPQ itself. A correlation study of Personality Assessment instruments might isolate further personality variables to assist in the prediction of creative potential.

Another research area, which the writer found to be of great interest to many of the teachers in the sample, is the matching of teacher-student cognitive styles. Some teachers identified themselves with the closed-system of education and stated that they taught better in an organized and well-defined educational setting. It seems likely that these teachers would operate best with a group of LC students. Other teachers professed to enjoy the more flexible, spontaneous approach to teaching, as outlined in a personally open system of education. These teachers would appear to function better with the more self-motivated HC student. A fascinating study could be conducted to ascertain whether preferred educational settings, and personality profile, are correlated in any meaningful way.

Limitations

The use of 10 classes of students resulted in a very low teacher population. In order to have obtained a large enough sample of teachers in the classroom, the sample size of students would have become unmanageably large. It was therefore decided to supplement the teacher sample by using Evening Credit class students, the majority of

whom were currently teaching. This supplementary group was not able to provide creativity ratings on the students, but was used to increase the quantity of teacher definitions to a total sample size of 75. The use of only one teacher to rate each class of students was undesirable. The writer would have preferred to have each class rated by several teachers, and to have formed a consensus rating as was done with the students' ratings. The use of one teacher only permits the possibility of personality differences, or similar contingencies, affecting the selection of students, and could result in a student being assigned to a group for reasons other than level of creativity. It is suggested that the use of consensus votes for ratings is a useful precaution against random or doubtful votes.

The ACL presented certain difficulties as an instrument for obtaining creativity criteria. The ACL is untimed, and consequently there was considerable variation in time taken to check adjectives. Although it was recommended to respond fairly quickly, and to be guided by first opinions, some subjects worked very slowly and deliberated over each adjective. It seems very likely that length of time taken to respond could affect ACL selections considerably. Those students who worked very slowly frequently expressed difficulty in fulfilling the task, and in making choices between the adjectives. It might be preferable to use a time limit in administering the ACL. However, it would also be necessary to ensure that all students had completed the instrument satisfactorily.

It was noted in discussion with subjects (both teachers and students) that they commonly held a positive concept of creativity. This was most apparent in their selection of adjectives which (in

contrast to published scales) tend to be of exclusively positive terms. The writer observed this trend both in administering the instruments and in analyzing the data. It was arbitrarily decided not to deal with this issue in the present study, but merely to note that this trend in defining creativity as a positive concept was observed. The creativity definitions analyzed in this study are almost unanimously positive, and would appear to be a limitation of this study. The major discrepancy between the Cr scales formed in this study, and published Cr scales, is the absence of negative terminology in defining creativity.

CHAPTER V

SUMMARY

The present study arose out of an observed problem--the identification of creative students. The writer felt that most of the cognitive measures of creativity were in fact testing intelligence factors. A review of the current literature suggested that an interesting and informative area of research might be into personality differences between High Creatives and Low Creatives. This study attempted to differentiate between HC and LC high school students on the 14 factors of Cattell's HSPQ.

The subjects used in this study were 10 classes of Grade XI and XII students in four Edmonton Public schools, their 10 teachers, and a group of University of Alberta Evening Credit students (most of whom are currently engaged as teachers). In order to determine the attributes and qualities associated with their concept of "creativity", all subjects were asked to respond to an Adjective Check List, checking those adjectives which complied with their personal understanding of the term. Subjects were also requested to complete an open-ended sentence, in order to more fully explain their concept of "creativity". The high school students, only, were administered Cattell's HSPQ. Student and teacher ratings were used to identify two discrete groups of HC and LC students.

The results of this study were used to tabulate common concepts about creativity, and these were compared with published findings. Teacher and student ratings identified two discrete groups of students-HC and LC. These two groups were compared on Cattell's HSPQ, and

significant differences were noted.

The findings of the study are summarized as follows:

1. Considerable consensus was obtained between students and teachers in identifying very High, or very Low, Creative students through a rating procedure. In most classes two or three students were consistently ranked by both teacher and students as belonging to one of the two discrete categories. Out of a total sample of 259 students, 36 were identified as HC and 28 as LC.
2. An Adjective Check List was found to be only partially useful in obtaining a group definition of creativity. Considerable consensus was obtained between students and teachers in selecting a small group of adjectives which appear to be consistently used in describing creativity. However, the adjectives chosen by the subjects in this study differed from published Creativity scales, in that the subjects chose exclusively positive adjectives. Published scales also included several negative aspects of creativity.
3. Personality differences were found between HC and LC groups. Two personality factors were identified on Cattell's HSPQ which significantly differed between the two groups. The positive aspects of these two factors were very similar to those adjectives checked by the subjects in this study. However, it was also noted that negative attributes were included in these two factors, which were also found on published Cr scales, but excluded by the subjects in this study.

The findings of this study are by no means conclusive, but suggest that further exploratory research into the area of creativity and

personality variables is warranted. Significant differences between HC and LC students were found on factors H and I on the HSPQ. However, the writer suggests that further research using different Personality Inventories is required in order to substantiate these personality variables. If, as much of the literature suggests, highly creative students flourish best in an educational environment more suited to their interests, cognitive style, and personality differences, then it becomes crucial to develop instruments to identify these students. It seems possible that research into personality variables unique to highly creative students may be a more fruitful approach than the development of new cognitive instruments to test for creativity.

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APPENDIX A

Open-ended sentence and Adjective Check List
used by all subjects to define Creativity

This study is an attempt to identify creativity in the classroom. It is hoped that you will respond by indicating your <u>own</u> criteria that you would use to identify a creative student. Please respond to the following sentence, completing it in accord with your own beliefs, rather than giving a dictionary definition:

"A creative student is

This check list is being used to identify those adjectives which best describe a creative student. Please check those adjectives which you think are most applicable. Work fairly quickly, and do not spend too much time considering any one adjective. First opinions are often most meaningful.

absent-minded
active
adaptable
adventurous
affected
affectionate
aggressive
alert
aloof
ambitious
anxious
apathetic
appreciative
argumentative
arrogant
artistic
assertive
attractive
autocratic
awkward
bitter
blustery
boastful
bossy
calm
capable
careless
cautious
changeable
charming
cheerful
civilized
clear-thinking
clever
coarse
cold
commonplace
complaining
complicated
conceited
confident
confused
conscientious
conservative
considerate
contented
conventional
cool
co-operative
courageous
cowardly
cruel
curious
cynical
daring
deceitful
defensive
deliberate
demanding
dependable
dependent
despondent
determined
dignified
discreet
disorderly
dissatisfied
distractible
distrustful
dominant
dreary
dull

easy-going
effeminate
efficient
egotistical
emotional
energetic
enterprising
enthusiastic
evasive
excitable
fair-minded
fault-finding
fearful
feminine
fickle
flirtatious
foolish
forceful
foresighted
forgetful
forgiving
formal
frank
friendly
frivolous
fussy
generous
gentle
gloomy
good-looking
good-natured
greedy
handsome
hard-headed
hard-hearted
hasty
headstrong
healthy
helpful
high-strung
honest
hostile
humorous
hurried
idealistic
imaginative
immature
impatient
impulsive
independent
indifferent
individualistic
industrious
infantile
informal
ingenious
inhibited
initiative
insightful
intelligent
interests narrow
interests wide
intolerant
inventive
irresponsible
irritable
jolly
kind
lazy
leisurely
logical
loud
loyal
mannerly
masculine
mature
meek
methodical
mild
mischievous
moderate

modest
moody
nagging
natural
nervous
noisy
obliging
obnoxious
opinionated
opportunistic
optimistic
organized
original
outgoing
outspoken
painstaking
patient
peaceable
peculiar
persevering
persistent
pessimistic
planful
pleasant
pleasure-seeking
poised
polished
practical
praising
precise
prejudiced
preoccupied
progressive
prudish
quarrelsome
queer
quick
quiet
quitting
rational
rattlebrained
realistic
reasonable
rebellious
reckless
reflective
relaxed
reliable
resentful
reserved
resourceful
responsible
restless
retiring
rigid
robust
rude
sarcastic
self-centred
self-confident
self-controlled
self-denying
self-pitying
self-punishing
self-seeking
selfish
sensitive
sentimental
serious
severe
sexy
shallow
sharp-witted
shiftless
show-off
shrewd
shy
silent
simple
sincere
slipshod

slow
sly
smug
snobbish
sociable
soft-hearted
sophisticated
spendthrift
spineless
spontaneous
spunky
stable
steady
stern
stingy
stolid
strong
stubborn
submissive
suggestible
sulky
superstitious
suspicious
sympathetic
tactful
tactless
talkative
temperamental
tense
thankless
thorough
thoughtful
thrifty
timid
tolerant
touchy
tough
trusting
unaffected
unambitious
unassuming
unconventional
undependable
understanding
unemotional
unexcitable
unfriendly
uninhibited
unintelligent
unkind
unrealistic
unscrupulous
unselfish
unstable
vindictive
versatile
warm
wary
weak
whiny
wholesome
wise
withdrawn
witty
worrying
zany

APPENDIX B

Selection Sheet used to list High and Low Creative Students
by High School Students and their Teachers

List the 10 most creative students in this group, bearing in mind those criteria you used to describe creativity.

1.

2.

3.

4.

5.

6.

7.

8.

9.

10.

In the same way, list the 10 least creative students in this group.

1.

2.

3.

4.

5.

6.

7.

8.

9.

10.

APPENDIX C

Cattell's High School Personality Questionnaire

SAMPLE ONLY

Jr.-Sr.

HSPQ

FORM A

1968-69 Edition

WHAT TO DO: You have a Booklet and an Answer Sheet. Write your name, age, etc., on the Answer Sheet where it tells you to.

The Booklet before you has in it questions about your interests and your likes and dislikes. Although you are to read the questions in *this* Booklet, *you must put your answers on the Answer Sheet* making sure that the number of your answer *matches* the number of the question in the Booklet.

First, we shall give you two examples so that you will know exactly what to do. After each of the questions there are three answers. Read the following examples and fill in the right boxes where it says Example 1 and Example 2, on the Answer Sheet, below your name. Fill in the left-hand box if your answer choice is the "a" answer, the middle box if your choice is the "b" answer, and the right-hand box if you choose the "c" answer.

EXAMPLES:

1. Which would you rather do:
   a. visit a zoo,
   b. uncertain,
   c. go up in an airplane?

2. If you have a quarrel, do you make friends again quickly?
   a. yes, b. in between, c. no.

As you see from these examples, there are *usually* no right or wrong answers, although sometimes a correct answer is expected. Each person is different and you should say only what is true for *you*. You can always find one answer that suits you a *little* better than the others, so never leave a question without marking one of the answers.

Inside you will find more questions like the ones above. When you are told to turn the page, begin with number 1 and go on until you finish all the questions. In answering them, please keep these four points in mind:

1. Answer the questions frankly and truthfully. There is no advantage in giving an untrue answer about yourself because you think it is the "right thing to say."

2. Answer the questions as quickly as you can. Don't spend too much time thinking about them. Give the first, natural answer that comes to you. Some questions may seem much like others, but no two are exactly alike so your answers will often be different too.

3. Use the middle answer *only* when it is *absolutely impossible* to decide on one of the other choices. In other words, the "a" or the "c" answer should be used *most* of the time.

4. Don't skip any questions. Sometimes a statement may not seem to apply to you, but answer every question, somehow.

If there is anything you don't understand, please ask your questions now. If you have no question now, but later on come across a word you don't know, ask the examiner then.

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HSPQ-Ath-SAA

1. Have you understood the instructions?
   a. yes, b. uncertain, c. no.

2. At a picnic would you rather spend some time:
   a. exploring the woods alone,
   b. uncertain,
   c. playing around the campfire with the crowd?

3. In a group discussion, do you like to tell what you think?
   a. yes, b. sometimes, c. no.

4. When you do a foolish thing, do you feel so bad that you wish the earth would just swallow you up?
   a. yes, b. perhaps, c. no.

5. Do you find it easy to keep an exciting secret?
   a. yes, b. sometimes, c. no.

6. When you decide something, do you:
   a. wonder if you may want to change your mind,
   b. in between,
   c. feel sure you're satisfied with it?

7. Can you work hard on something, without being bothered if there's a lot of noise around you?
   a. yes, b. perhaps, c. no.

8. If friends' ideas differ from yours, do you keep from saying yours are better, so as not to hurt their feelings?
   a. yes, b. sometimes, c. no.

9. Do you usually ask someone else to help you when you have a hard problem?
   a. seldom, b. sometimes, c. often.

10. Would you say that *some* rules and regulations are stupid and out of date?
    a. yes, and I don't bother with them if I can help it,
    b. uncertain,
    c. no, most rules are necessary and should be obeyed.

11. Which of these says better what you are like?
    a. a dependable leader,
    b. in between,
    c. charming, good looking.

12. Do you sometimes feel, before a big party or outing, that you are not so interested in going?
    a. yes, b. perhaps, c. no.

13. When you rightly feel angry with people, do you think it's all right for you to shout at them?
    a. yes, b. perhaps, c. no.

14. When classmates play a joke on you, do you usually enjoy it as much as others without feeling at all upset?
    a. yes, b. perhaps, c. no.

15. Are there times when you think, "People are so unreasonable, they can't even be trusted to look after their own good"?
    a. true, b. perhaps, c. false.

16. Can you stay cheerful even when things go wrong?
    a. yes, b. uncertain, c. no.

17. Do you try to keep up with the fads of your classmates?
    a. yes, b. sometimes, c. no.

18. Do most people have more friends than you do?
    a. yes, b. uncertain, c. no.

19. Would you rather be:
    a. a traveling TV actor,
    b. uncertain,
    c. a medical doctor?

20. Do you think that life runs more smoothly and more satisfyingly for you than for many other people?
    a. yes, b. perhaps, c. no.

21. Do you have trouble remembering someone's joke well enough to tell it yourself?
    a. yes, b. sometimes, c. no.

22. Have you enjoyed being in drama, such as school plays?
a. yes, b. uncertain, c. no.

23. "Mend" means the same as:
a. repair, b. heal, c. patch.

24. "Truth" is the opposite of:
a. fancy, b. falsehood, c. denial.

25. Do you completely understand what you read in school?
a. yes, b. usually, c. no.

26. When chalk screeches on the blackboard does it "give you the shivers"?
a. yes, b. perhaps, c. no.

27. When something goes all wrong, do you get very angry with people before you start to think what can be done about it?
a. often, b. sometimes, c. seldom.

28. When you finish school, would you like to:
a. do something that will make people like you, though you are poor,
b. uncertain,
c. make a lot of money?

29. Do you avoid going into narrow caves or climbing to high places?
a. yes, b. sometimes, c. no.

30. Are you always ready to show, in front of everyone, how well you can do things compared with others?
a. yes, b. perhaps, c. no.

31. Do you ask advice from your parents about the best things to do at school?
a. often, b. sometimes, c. seldom.

32. Can you talk to a group of strangers without stammering a little or without finding it hard to say what you want to?
a. yes, b. perhaps, c. no.

33. Do some types of movies upset you?
a. yes, b. perhaps, c. no.

34. Would you enjoy more watching a boxing match than a beautiful dance?
a. yes, b. perhaps, c. no.

35. If someone has been unkind to you, do you soon trust him again and give him another chance?
a. yes, b. perhaps, c. no.

36. Do you sometimes feel you are not much good, and that you never do anything worthwhile?
a. yes, b. perhaps, c. no.

37. When a group of people are doing something, do you:
a. take an active part in what they are doing,
b. in between,
c. usually only watch?

38. Do you tend to be quiet when out with a group of friends?
a. yes, b. sometimes, c. no.

39. Do people say you are a person who can always be counted on to do things exactly and properly?
a. yes, b. perhaps, c. no.

40. When you read an adventure story, do you:
a. just enjoy the story as it goes along,
b. uncertain,
c. get bothered whether it's going to end happily?

41. Does it bother you if you have to sit still and wait for something to begin?
a. yes, b. in between, c. no.

42. Do you feel hurt if people borrow your things without asking you?
a. yes, b. perhaps, c. no.

43. "Firm" is the opposite of:
a. easy, b. kind, c. loose.

44. "Rich" is to "money" as "sad" is to:
a. trouble, b. friends, c. land.

45. Have you always got along really well with your parents, brothers, and sisters?
a. yes, b. in between, c. no.

46. If your classmates leave you out of a game, do you:
a. think it just an accident,
b. in between,
c. feel hurt and angry?

47. Do people say you are sometimes excitable and scatterbrained though they think you are a fine person?
a. yes, b. perhaps, c. no.

48. When you are on a bus or train, do you talk:
a. in your ordinary voice,
b. in between,
c. as quietly as possible?

49. Which would you rather be:
a. the most popular person in school,
b. uncertain,
c. the person with the best grades?

50. In a group of people, are you generally one of those who tells jokes and funny stories?
a. yes, b. perhaps, c. no.

51. Do you like to tell people to follow proper rules and regulations?
a. yes, b. sometimes, c. no.

52. Are your feelings easily hurt?
a. yes, b. perhaps, c. no.

53. In a play, would you rather act the part of a famous teacher of art than that of a tough pirate?
a. yes, b. perhaps, c. no.

54. Which course would you rather take:
a. practical mathematics,
b. uncertain,
c. foreign language or drama?

55. Would you rather spend free time:
a. by yourself, on a book or stamp collection,
b. uncertain,
c. working under others in a group project?

56. Do you feel that you are getting along well, and that you do everything that could be expected of you?
a. yes, b. perhaps, c. no.

57. Do you have trouble acting like or being like other people expect you to be?
a. yes, b. uncertain, c. no.

58. If you found you had nothing to do some evening, would you:
a. call up some friends and do something with them,
b. not sure,
c. read a good book or work on a hobby?

59. Would you like to be extremely good-looking, so that people would notice you wherever you go?
a. yes, b. perhaps, c. no.

60. When something important is coming up, such as a test or a big game, do you:
a. stay very calm and relaxed,
b. in between,
c. get very tense and worried?

61. If someone puts on noisy music while you are trying to work, do you feel you *must* get away?
a. yes, b. perhaps, c. no.

62. In dancing or music, do you pick up a new rhythm easily?
a. yes, b. sometimes, c. no.

63. "Run" is to "pant" as "eat" is to:
a. exercise, b. indigestion, c. sleep.

64. If Joan's mother is my father's sister, what relation is Joan's father to my brother?
a. second cousin, b. grandfather, c. uncle.

65. Do you often make big plans and get excited about them, only to find that they just won't work out?
a. yes, b. occasionally, c. no.

66. When things go wrong and upset you, do you believe in:
a. just smiling,
b. in between,
c. making a fuss?

67. Do you often remember things differently from other people, so that you have to disagree about what really happened?
a. yes, b. perhaps, c. no.

68. Are there times when you feel so pleased with the world that you just have to sing and shout?
a. yes, b. perhaps, c. no.

69. When you are ready for a job, would you like one that:
a. is steady and safe, even if it takes hard work,
b. uncertain,
c. has lots of change and meetings with lively people?

70. Do you like doing really unexpected and startling things to people?
a. yes, b. once in a while, c. no.

71. If everyone were doing something you think is wrong, would you:
a. go along with them,
b. uncertain,
c. do what you think is right?

72. Can you work just as well, without feeling uncomfortable, when people are watching you?
a. yes, b. perhaps, c. no.

73. Would you rather spend a free afternoon:
a. in a place with beautiful pictures and gardens,
b. uncertain,
c. in a duck shooting match?

74. Would you rather spend an afternoon by a lake:
a. watching dangerous speed boat racing,
b. uncertain,
c. walking by the lovely shore with a friend?

75. When you are in a group, do you spend more time:
a. enjoying the friendship,
b. uncertain,
c. watching what happens?

76. Can you always tell what your real feelings are, for example, whether you are tired or just bored?
a. yes, b. perhaps, c. no.

77. When things are going wonderfully, do you:
a. actually almost "jump with joy,"
b. uncertain,
c. feel good inside, while appearing calm?

78. Would you rather be:
a. a builder of bridges,
b. uncertain,
c. a member of a traveling circus?

79. When something is bothering you a lot, do you think it's better to:
a. try to ignore it until you cool off,
b. uncertain,
c. blow off steam?

80. Do you sometimes say silly things, just to see what people will say?
a. yes, b. perhaps, c. no.

81. When you do poorly in an important game, do you:
a. say, "This is just a game,"
b. uncertain,
c. get angry and "kick yourself"?

82. Do you go out of your way to avoid crowded buses and streets?
a. yes, b. perhaps, c. no.

83. "Usually" means the same as:
a. sometimes, b. always, c. generally.

84. The grandmother of the daughter of my brother's sister is my:
a. mother, b. sister-in-law, c. niece.

85. Are you almost always contented?
a. yes, b. in between, c. no.

86. If you keep breaking and accidentally wasting things when you are making something, do you keep calm just the same?
a. yes, b. perhaps, c. no, I get furious.

87. Have you ever felt dissatisfied and said to yourself, "I bet I could run this school better than the teachers do"?
a. yes, b. perhaps, c. no.

88. Would you rather be:
a. someone who plans homes and parks,
b. uncertain,
c. a singer or member of a dance band?

89. If you had a chance to do something really wild and adventurous, but also rather dangerous, would you:
a. probably not do it,
b. not sure,
c. certainly do it?

90. When you have homework to do, do you:
a. very often just not do it,
b. in between,
c. always get it done on time?

91. Do you usually discuss your activities with your parents?
a. yes, b. sometimes, c. no.

92. When the class is discussing something, do you usually have something to say?
a. almost never,
b. once in a while,
c. always.

93. Do you stand up before your class without looking nervous and ill-at-ease?
a. yes, b. perhaps, c. no.

94. Which would you rather watch on a fine evening:
a. car racing,
b. uncertain,
c. an open-air musical play?

95. Have you ever thought what you would do if you were the only person left in the world?
a. yes, b. not sure, c. no.

96. Do you learn games quickly?
a. yes, b. in between, c. no.

97. Do you wish you could learn to be more carefree and lighthearted about your school work?
a. yes, b. perhaps, c. no.

98. Are you, like a lot of people, slightly afraid of lightning?
a. yes, b. perhaps, c. no.

99. Do you ever suggest to the teacher a new subject for the class to discuss?
a. yes, b. perhaps, c. no.

100. Would you rather spend a break between morning and afternoon classes in:
a. a card game,
b. uncertain,
c. catching up on homework?

101. When you are walking in a quiet street in the dark, do you often get the feeling you are being followed?
a. yes, b. perhaps, c. no.

102. In talking with your classmates, do you dislike telling your most private feelings?
a. yes, b. sometimes, c. no.

103. When you go into a new group, do you:
a. quickly feel you know everyone,
b. in between,
c. take a long time to get to know people?

104. Look at these five words: *mostly, gladly, chiefly, mainly, highly*. The word that does not belong with the others is:
a. mostly, b. gladly, c. highly.

105. Do you sometimes feel happy and sometimes feel depressed without real reason?
a. yes, b. uncertain, c. no.

106. When people around you laugh and talk while you are listening to radio or TV:
a. are you happy,
b. in between,
c. does it spoil things and annoy you?

107. If you accidentally say something odd in company, do you stay uncomfortable a long time and find it hard to forget?
a. yes, b. perhaps, c. no.

108. Which would you rather read about:
a. how to win at basketball,
b. uncertain,
c. how to be nice to everyone?

109. Are you best thought of as a person who:
a. thinks, b. in between, c. acts?

110. Do you spend most of your weekly allowance for fun (instead of saving some for future needs)?
a. yes, b. perhaps, c. no.

111. Do other people often get in your way?
a. yes, b. in between, c. no.

112. How would you rate yourself?
a. inclined to be moody,
b. in between,
c. not at all moody.

113. How often do you go places or do things with a group of friends:
a. very often, b. sometimes, c. hardly ever.

114. What kind of movie do you like best?
a. musicals, b. uncertain, c. war stories.

115. Do you get in trouble more often by saying to a group that wants to do something:
a. "Let's go!"
b. uncertain,
c. "I'd rather not join in"?

116. When you were growing up, did you expect the world to be:
a. kinder and more considerate than it is,
b. uncertain,
c. tougher and harder than it is?

117. Do you find it easy to go up and introduce yourself to an important person?
a. yes, b. perhaps, c. no.

118. Do you think that often a committee of your classmates takes more time and makes poorer decisions than one person would?
a. yes, b. perhaps, c. no.

119. Do you feel you are doing pretty much what you should be doing in life?
a. yes, b. uncertain, c. no.

120. Do you sometimes feel so mixed up that you don't know what you are doing?
a. yes, b. perhaps, c. no.

121. When someone is disagreeing with you, do you:
a. let him say all he has to say,
b. uncertain,
c. tend to interrupt before he finishes?

122. Would you rather live:
a. in a deep forest, with only the songs of birds,
b. uncertain,
c. on a busy street corner, where a lot happens?

123. If you were to work on a railroad, would you rather:
a. be a conductor and talk to the passengers,
b. uncertain,
c. be the engineer and run the train?

124. Look at these five words: *below, beside, above, behind, between.* The word that does not belong with the others is:
a. below, b. between, c. beside.

125. If someone asks you to do a new and difficult job, do you:
a. feel glad and show what you can do,
b. in between,
c. feel you will make a mess of it?

126. When you raise your hand to answer a question in class, and many others raise their hands too, do you get excited?
a. sometimes, b. not often, c. never.

127. Would you rather be:
a. a teacher, b. uncertain, c. a scientist?

128. On your birthday, do you prefer:
a. to be asked beforehand to choose the present you want,
b. uncertain,
c. to have the fun of getting a present that's a complete surprise?

129. Are you very careful not to hurt anyone's feelings or startle anyone, even in fun?
a. yes, b. perhaps, c. no.

130. If you were working with groups in class, would you rather:
a. walk around to carry things from one person to another,
b. uncertain,
c. specialize in showing people how to do one difficult part?

131. Do you take trouble to be sure you are right before you say anything in class?
a. always, b. generally, c. not usually.

132. Are you so afraid of what might happen that you avoid making decisions one way or the other?
a. often, b. sometimes, c. never.

133. When things are frightening, can you laugh and not be bothered?
a. yes, b. perhaps, c. no.

134. Do some books and plays almost make you cry?
a. yes, often, b. sometimes, c. no, never.

135. Would you like better, when in the country:
a. running a class picnic,
b. uncertain,
c. learning to know all the different trees in the woods?

136. In group discussions, do you often find yourself:
a. taking a lone stand,
b. uncertain,
c. agreeing with the group?

137. Do your feelings get so bottled up that you feel you could burst?
a. often, b. sometimes, c. seldom.

138. Which kind of friends do you like? Those who like to:
a. "kid around,"
b. uncertain,
c. be more serious?

139. If you were not a human being, would you rather be:
a. an eagle on a far mountain,
b. uncertain,
c. a seal, in a seal colony by the seashore?

140. Are you usually a very careful person?
a. yes, b. in between, c. no.

141. Do small troubles sometimes "get on your nerves" even though you know that they are not very important?
a. yes, b. perhaps, c. no.

142. Are you sure you have answered *every* question?
a. yes, b. perhaps, c. no.

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